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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/025,599	12/18/2001	Robert A. Marshall	062891.0574	7923

5073 7590 04/16/2007

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EXAMINER	
MOORE JR, MICHAEL J	
ART UNIT	PAPER NUMBER
2616	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	04/16/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/16/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/025,599	MARSHALL ET AL.	
	Examiner	Art Unit	
	Michael J. Moore, Jr.	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,7-17,20,23-30,32-35,38-41,43 and 44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-4,7-12 and 14-16* is/are allowed.

6)☒ Claim(s) *17,20,23-30,32-35,38-41,43 and 44* is/are rejected.

7)☒ Claim(s) *13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim **13** is objected to because of the following informalities: On line 3, the word "and" before word "resulting" should be "any". Appropriate correction is required.

Amendments made by Applicant to obviate the claim objections presented in the previous Office Action are proper and have been entered. These objections have been withdrawn.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims **17, 20, 23-30, 32-35, 38-41, 43, and 44** are rejected under 35 U.S.C. 103(a) as being unpatentable over Muntz (U.S. 6,532,215) in view of Itri (U.S. 6,909,781).

Regarding claim **17**, *Muntz* teaches the network diagnostics mode of the device of Figure 2 containing a transmit channel between DAC 32 and line driver 46 as well as a receive channel between ADC 34 and line receiver 48 coupled via hybrid coupler 50 to a medium 58 (combined channel) as shown in Figure 2 and spoken of on column 4, lines 26-67.

Muntz also teaches the transmission of a TDR stimulus pulse 40 (test signal) from DAC 32 to line driver 46 of Figure 2 via multiplexer 42 and on to medium 58 (combined channel) as spoken of on column 8, lines 12-29.

Muntz also teaches the detection of reflections (indicate potential fault conditions) encountered in the signal by DSP 28 (digital signal processor) of Figure 2 as spoken of on column 8, lines 30-49.

Muntz does not teach terminating the combined channel with a termination circuit, the termination circuit having an impedance and comprising one or more resistors and one or more capacitors.

However, *Itri* teaches a system in Figure 8 used for testing for fault conditions in a DSL system, where a tip portion 823 and ring portion 824 of a DSL line 110 (combined channel) are coupled to an isolation circuit 804 (termination circuit) comprising a plurality of resistance and capacitance elements 830-835 (resistors and capacitors) as spoken of on column 7, line 60 – column 8, line 8.

These references are considered to be analogous art in that they are both concerned with the use of test signals to detect fault conditions in a DSL network environment.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to combine the isolation circuit teachings of *Itri* with the teachings of *Muntz* in order to allow monitoring or testing of the tip and ring portions of the DSL line while maintaining DC isolation from the DSL line as spoken of on column 7, lines 62-64.

Regarding claim **20**, *Muntz* further teaches the comparison of actual characteristic impedances (detected signal) in medium 58 to predetermined characteristic impedances (expected signal) as spoken of on column 10, lines 6-22.

Regarding claim **23**, *Muntz* further teaches POTS filter 54 of Figure 2 that permits signals to propagate to medium 58 from hybrid coupler 50 as spoken of on column 6, lines 19-25.

Regarding claim **24**, *Muntz* further teaches the comparison of the actual characteristic impedances (detected signal) in medium 58 to predetermined characteristic impedances as spoken of on column 10, lines 6-22.

Regarding claim **25**, *Muntz* further teaches communication network link 12 (termination circuit) of Figure 2 coupled to medium 58 (input line) having an impedance as spoken of on column 9, lines 53-61.

Regarding claim **26**, *Muntz* further teaches the high impedance fault conditions (open) spoken of on column 10, lines 6-11.

Regarding claim **27**, *Muntz* further teaches communication network link 12 (termination circuit) of Figure 2 coupled to medium 58 having an impedance as spoken of on column 9, lines 53-61 as well as switch 100 coupled to network link 12 as shown in Figure 4.

Regarding claim **28**, *Muntz* further teaches switch 100 of Figure 4 that permits the transmit signal 40 to be transmitted to the medium 58 without having to propagate through the network 54 as spoken of on column 12, lines 17-27.

Regarding claim **29**, *Muntz* further teaches the low impedance fault conditions (short) spoken of on column 10, lines 6-11.

Regarding claim **30**, *Muntz* teaches the network diagnostics mode of the device of Figure 2 containing a transmit channel between DAC 32 and line driver 46 as well as a receive channel between ADC 34 and line receiver 48 coupled via hybrid coupler 50 to a medium 58 (combined channel) as shown in Figure 2 and spoken of on column 4, lines 26-67.

Muntz further teaches communication network link 12 of Figure 2 coupled to a communication network as well as a medium 58 (combined channel) as shown in Figure 2.

Muntz further teaches the transmission of a TDR stimulus pulse 40 (test signal) from DAC 32 to line driver 46 of Figure 2 via multiplexer 42 and on to medium 58 (combined channel) as spoken of on column 8, lines 12-29.

Muntz further teaches switch 100 of Figure 4 that permits the transmit signal 40 to be transmitted to the medium 58 without having to propagate through the network 54 as spoken of on column 12, lines 17-27.

Muntz further teaches the detection of reflections (indicate potential fault conditions) encountered in the signal 40 by DSP 28 of Figure 2 as spoken of on column 8, lines 30-49.

Muntz further teaches the sending of a signal by line receiver 48 (second switch) either via filter network 44 (filter) to multiplexer 38, or directly to multiplexer 38 while bypassing the filter network 44 as shown in Figure 2 and spoken of on column 4, lines 61-67.

Muntz does not teach terminating the combined channel with a termination circuit, the termination circuit having an impedance and comprising one or more resistors and one or more capacitors.

However, *Itri* teaches a system in Figure 8 used for testing for fault conditions in a DSL system, where a tip portion 823 and ring portion 824 of a DSL line 110 (combined channel) are coupled to an isolation circuit 804 (termination circuit) comprising a plurality of resistance and capacitance elements 830-835 (resistors and capacitors) as spoken of on column 7, line 60 – column 8, line 8.

These references are considered to be analogous art in that they are both concerned with the use of test signals to detect fault conditions in a DSL network environment.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to combine the isolation circuit teachings of *Itri* with the teachings of *Muntz* in order to allow monitoring or testing of the tip and ring portions of the DSL line while maintaining DC isolation from the DSL line as spoken of on column 7, lines 62-64.

Regarding claim **32**, *Muntz* further teaches the channel between DAC 32 and line driver 46 of Figure 2 containing a path through filter network 36 as well as a direct path (bypass) to multiplexer 42.

Regarding claim **33**, *Muntz* further teaches the comparison of the actual characteristic impedances (test signal) in medium 58 to predetermined characteristic impedances as spoken of on column 10, lines 6-22.

Regarding claim **34**, *Muntz* further teaches the comparison of the actual characteristic impedances (detected signal) in medium 58 to predetermined characteristic impedances (expected signal) as spoken of on column 10, lines 6-22.

Regarding claim **35**, *Muntz* teaches the network system 10 of Figure 1 containing device 14 (line card).

Muntz also teaches the network diagnostics mode of the device of Figure 2 containing a transmit channel between DAC 32 and line driver 46 as well as a receive channel between ADC 34 and line receiver 48 coupled via hybrid coupler 50 to a medium 58 (combined channel) as shown in Figure 2 and spoken of on column 4, lines 26-67.

Muntz also teaches communication network link 12 of Figure 2 coupled to a communication network as well as a medium 58 (combined channel) having an impedance as shown in Figure 2 and spoken of on column 9, lines 53-61.

Muntz also teaches switch 100 of Figure 4 that permits the transmit signal 40 to be transmitted to the medium 58 without having to propagate through the network 54 as spoken of on column 12, lines 17-27.

Muntz also teaches the detection of reflections (indicate potential fault conditions) encountered in the signal 40 by DSP 28 of Figure 2 as spoken of on column 8, lines 30-49.

Muntz also teaches the channel between DAC 32 (switch) and line driver 46 of Figure 2 containing a path through filter network 36 as well as a direct path (bypass) to multiplexer 42.

Muntz does not teach terminating the combined channel with a termination circuit, the termination circuit having an impedance and comprising one or more resistors and one or more capacitors.

However, *Itri* teaches a system in Figure 8 used for testing for fault conditions in a DSL system, where a tip portion 823 and ring portion 824 of a DSL line 110 (combined channel) are coupled to an isolation circuit 804 (termination circuit) comprising a plurality of resistance and capacitance elements 830-835 (resistors and capacitors) as spoken of on column 7, line 60 – column 8, line 8.

These references are considered to be analogous art in that they are both concerned with the use of test signals to detect fault conditions in a DSL network environment.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to combine the isolation circuit teachings of *Itri* with the teachings of *Muntz* in order to allow monitoring or testing of the tip and ring portions of the DSL line while maintaining DC isolation from the DSL line as spoken of on column 7, lines 62-64.

Regarding claim **38**, *Muntz* further teaches communication network link 12 of Figure 2 coupled to medium 58 (telephone line) having an impedance as spoken of on column 9, lines 53-61.

Regarding claim **39**, *Muntz* further teaches POTS filter 54 as well as switch 100 (components) coupled to medium 58 (combined channel) shown in Figures 2 and 4, respectively.

Regarding claim **40**, *Muntz* does not teach wherein one or more electrical components comprise a transformer.

However, *Itri* teaches a DSL line testing system in Figure 8 containing a scaling transformer coupled to hybrid 218.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to use a scaling transformer as in *Itri* in the system of *Muntz* in order to provide a way to adjust the voltage of incoming and outgoing signals to an appropriate level.

Regarding claim **41**, *Muntz* further teaches hybrid coupler 50 shown in Figure 2.

Regarding claim **43**, *Muntz* teaches the network diagnostics mode of the device of Figure 2 containing a transmit channel between DAC 32 and line driver 46 as well as a receive channel between ADC 34 and line receiver 48 coupled via hybrid coupler 50 to a medium 58 (combined channel) as shown in Figure 2 and spoken of on column 4, lines 26-67.

Muntz also teaches communication network link 12 of Figure 2 coupled to a communication network as well as a medium 58 (combined channel) as shown in Figure 2.

Muntz also teaches the transmission of a TDR stimulus pulse 40 (test signal) from DAC 32 to line driver 46 of Figure 2 via multiplexer 42 and on to medium 58 (combined channel) as spoken of on column 8, lines 12-29.

Muntz also teaches switch 100 of Figure 4 that permits the transmit signal 40 to be transmitted to the medium 58 without having to propagate through the network 54 as spoken of on column 12, lines 17-27.

Muntz also teaches the detection of reflections (indicate potential fault conditions) encountered in the signal 40 by DSP 28 of Figure 2 as spoken of on column 8, lines 30-49.

Muntz also teaches the channel between DAC 32 (second switch) and line driver 46 of Figure 2 containing a path through filter network 36 as well as a direct path (bypass) to multiplexer 42.

Muntz does not teach terminating the combined channel with a termination circuit, the termination circuit having an impedance and comprising one or more resistors and one or more capacitors.

However, *Itri* teaches a system in Figure 8 used for testing for fault conditions in a DSL system, where a tip portion 823 and ring portion 824 of a DSL line 110 (combined channel) are coupled to an isolation circuit 804 (termination circuit) comprising a plurality of resistance and capacitance elements 830-835 (resistors and capacitors) as spoken of on column 7, line 60 – column 8, line 8.

These references are considered to be analogous art in that they are both concerned with the use of test signals to detect fault conditions in a DSL network environment.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to combine the isolation circuit teachings of *Itri* with the teachings of *Muntz* in order to allow monitoring or testing of the tip and ring portions of the DSL line while maintaining DC isolation from the DSL line as spoken of on column 7, lines 62-64.

Regarding claim **44**, *Muntz* teaches the network system 10 of Figure 1 containing device 14 (line card).

Muntz also teaches the network diagnostics mode of the device of Figure 2 containing a transmit channel between DAC 32 and line driver 46 as well as a receive channel between ADC 34 and line receiver 48 coupled via hybrid coupler 50 to a

medium 58 (combined channel) as shown in Figure 2 and spoken of on column 4, lines 26-67.

Muntz also teaches communication network link 12 of Figure 2 coupled to a communication network as well as a medium 58 (combined channel) having an impedance as shown in Figure 2 and spoken of on column 9, lines 53-61.

Muntz also teaches switch 100 of Figure 4 that permits the transmit signal 40 to be transmitted to the medium 58 without having to propagate through the network 54 as spoken of on column 12, lines 17-27.

Muntz also teaches the detection of reflections (indicate potential fault conditions) encountered in the signal 40 by DSP 28 of Figure 2 as spoken of on column 8, lines 30-49.

Muntz also teaches the sending of a signal by line receiver 48 (associated switch) either via filter network 44 (filter) to multiplexer 38, or directly to multiplexer 38 while bypassing the filter network 44 as shown in Figure 2 and spoken of on column 4, lines 61-67.

Muntz does not teach terminating the combined channel with a termination circuit, the termination circuit having an impedance and comprising one or more resistors and one or more capacitors.

However, *Itri* teaches a system in Figure 8 used for testing for fault conditions in a DSL system, where a tip portion 823 and ring portion 824 of a DSL line 110 (combined channel) are coupled to an isolation circuit 804 (termination circuit)

comprising a plurality of resistance and capacitance elements 830-835 (resistors and capacitors) as spoken of on column 7, line 60 – column 8, line 8.

These references are considered to be analogous art in that they are both concerned with the use of test signals to detect fault conditions in a DSL network environment.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to combine the isolation circuit teachings of *Itri* with the teachings of *Muntz* in order to allow monitoring or testing of the tip and ring portions of the DSL line while maintaining DC isolation from the DSL line as spoken of on column 7, lines 62-64.

Allowable Subject Matter

4. Claims **1-4 and 7-16** are allowable over the prior art of record.

5. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims **1-4 and 7-16**, these claims are allowable for the reasons indicated in the previous Office Action.

Response to Arguments

6. Applicant's arguments with respect to *amended* claims **17, 30, 35, 43, and 44** have been considered but are moot in view of the new ground(s) of rejection provided above.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Moore, Jr. whose telephone number is (571) 272-3168. The examiner can normally be reached on Monday-Friday (7:30am - 4:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema S. Rao can be reached at (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system.

Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

mjm MM

Michael J. Moore, Jr.
Examiner
Art Unit 2616

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